IME 734, Introduction to Data Mining and Analytics, Fall, 2023

- Instructor: Dr. Laila Cure
- Department: Industrial, Systems and Manufacturing Engineering
- Student Office Hours:
  - Mondays, In person only : 12:30 pm – 1:30 pm, In Person.
  - Wednesdays, Virtual only : 12:30 – 1:30 pm

Click here to join the meeting

  - Other times by request.
- Classroom Day/Time: John Bardo Center 340, TR 2:00 pm – 3:15 pm
- Prerequisites: IME 254 Engineering Prob./Stat. I. or equivalent, Math 511 Linear Algebra or equivalent, Basic knowledge Internet search, e-mail, presentation, and Excel spreadsheets. The course requires students to self-learn a selected software package to apply the techniques learned during the course. Get started with the software packages used in examples:
  - Excel Pivot tables and charts:
    - https://www.excel-easy.com/data-analysis/pivot-tables.html
    - https://www.excel-easy.com/examples/pivot-chart.html
  - Tableau
    - Getting started: https://www.tableau.com/learn/training
    - LinkedIn Learning Video: “Exploratory analysis with Tableau”
  - RStudio (free open-source software):
    - Getting started: https://www.youtube.com/watch?v=lVKMsaWju8w
    - LinkedIn Learning Video: “Using Rstudio”
  - R Tutorial: https://www.statmethods.net/r-tutorial/index.html
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- (Required) The preferred data analytics software that supports ALL the analysis techniques covered in this course.

Before you begin your coursework, ensure that your computer meets technical standards (software, computer equipment, general skills, program management skills, communication skills, and managing your WSU e-mail) for use in this class.

Class Protocol and Conduct

This is a university course with commensurate expectations. We expect professional conduct in the classroom. Unprofessional conduct, e.g. off topic activities, may affect your grade or even your academic career. Be respectful at all times. Students demonstrating confrontational, disruptive, or threatening behavior will be asked to leave the classroom immediately and will not be allowed to return to the classroom for the remainder of the class period. Consequences of this behavior may also include (and are not limited to): Suspension from class for a minimum of one additional class period and report or referral to the WSU police department, Student Conduct and the WSU Care Team.

Below is a list of policies specific to this course:

1. Students enrolled in the course must be available to meet at the time of the class period for all the sessions of the term.
2. Each student is responsible for the syllabus, material discussed, distributed, or assigned during class, and all communications posted on blackboard. Students are responsible for attending lectures, preparing for flipped labs, participating in discussion forums, asking questions, and uploading lab assignments on time.
3. Labs are flipped . Students are expected to apply each method learned to a dataset of their choice. Lab instructions and preparation materials (if any) will be posted on Blackboard for students to practice before to the lab. The nature of the preparation materials will evolve throughout the semester. Initially, videos with detailed instructions will be posted. Then, only the code will be posted. Finally, students are expected to search for available online guides on how to implement the methods learned in the preferred software.
   3.1. The following will be graded during lab sessions:
      a. Students may choose to present their (preliminary) implementation results and conclusions to the class for feedback. Requires a draft of the project in a text editor. Only students presenting will get the extra credit points. Students wishing to present should contact the instructor 24 hours before the lab with the draft report for approval.
      b. Individual students' ability to answer questions about: the lab requirements, the recommended materials, and attempted implementation on their own datasets. Each student should be prepared for labs and be able to answer questions without help from other team members.
      c. Students not attending labs will receive a grade of 0 in the individual lab grade.
   3.2. A lab report will be submitted through Blackboard every week.
4. Students are encouraged to ask questions that help clarify concepts and problem-

solving during lectures, lab sessions, or office hours before quizzes and exams and before labs are due.

5. Outside articles presented during class sessions may be included in tests. Students must read them and ask questions before the tests.

   Students must follow instructions on collaboration during quizzes and exams. Unless otherwise noted, quizzes are individual. Collaboration during quizzes is not allowed.

7. Students are not allowed to talk to each other during quizzes and exams. Regardless of the conversation topic, any instance of talking during an in-person exam will be considered a violation of academic integrity and students involved will receive a grade of 0 in the quiz or exam.
8. The instructor will notify the students of any resources they may access during evaluations.

It is the students' responsibility to check their grades regularly on Blackboard. Grades may only be revised within a week of grade announcements. If you think your exam quiz or lab report was graded unfairly, you must submit a written request to the instructor explicitly articulating your rationale for unfair/mistaken grading. You must do this within one week of the day the grade of the exam/quiz/report is posted on Blackboard. Note that the instructor will re-grade the entire exam/quiz.

Contact Policy

Email communication is always preferred. Feel free to email me any questions or concerns following these guidelines:

- Always use the course name in the subject line of the email
- Remember to sign your name.
- Always email me from your WSU email address. Email sent from personal email servers like Gmail, Yahoo, etc., have a tendency to end up in my spam folder, and I never see them. You may also email me through Blackboard via the Email My Instructor tab.
- Lab related e-mail questions must be sent more than 2 days (Monday through Friday) before the due date to ensure a timely response.
- Whenever you have a question about RStudio, please send as much detail as possible. If you want my help in understanding an error message in RStudio, include a print of your RStudio screen showing the code being used. Note that questions regarding the use of software are difficult to answer through e-mail. Keep in mind that there is a large community of R users online, and that if you search online for the error or the function you are trying to use, you will find many other users experiencing the same, along with possible solutions.
- You should NOT contact me for tech support.
  - Any technical problems involving your computer, or issues regarding file uploading or sharing, should go through OneStop. You can contact them at 316-978-3909. You can also fill out a request for help form at their website.
  - However, if you have a problem with accessing or uploading assignments, you should let me know before your assignment is due. You will also have to accompany this notification with the file in question, so I can verify that it is completed by the due date/time.

Response Time

- To Email: within 24 hours on Monday-Friday, slower during weekends and holidays.
- Feedback on Assignments and in-person test grades: within one week of submission. Students not attending the session when the exam was returned may ask for their paper during in-person office hours.

Academic Integrity

Students at Wichita State University are expected to uphold high academic standards. WSU will not tolerate a lack of academic integrity. Students are responsible for knowing and following the Student Academic Integrity Policy 2.17 (https://www.wichita.edu/about/policy/ch_02/ch2_17.php

978-5177 or submit a report to the

your religious events, please let me know so that we can make arrangements for you.

Complaints or concerns related to alleged discrimination may be directed to the Office of Civil Rights, Title IX & ADA Compliance (CTAC), Wichita State University, telephone 316-978-3187.

Names & Pronouns

Everyone has the right to be addressed as and referred to by the name and pronouns (including non-binary pronouns) that they choose and that correspond to their gender identity. A student's chosen name and pronouns are to be respected at all times in the classroom.

For information about chosen name, students should visit www.wichita.edu/name. To provide preferred pronouns, click on "View and Update Personal Information" link in the Student Tools channel on the myWSU Home tab. Use the "Edit" buttons to update information.

Syllabus Policies and Student Resources

All students should familiarize themselves with the course-related policies and student resources that can be found at: www.wichita.edu/syllabuspolicies

These include, but may not be limited to:

- Important Academic Dates
- Proctoring exam options: For more information and requirements for using proctoring, please see

Grading Scale, continued

Points /Percentage	Letter Grade	Grade Points	Interpretation
≥ 92%	A	4.00	A range denotes excellent performance
87% - 92%	A-	3.70	
83% - 87%	B+	3.30	
80% - 83%	B	3.00	B range denotes good performance
77% - 80%	B-	2.70	
73% - 77%	C+	2.30	
70% - 73%	C	2.00	C range denotes satisfactory performance
67% - 70%	C-	1.70	
63% - 67%	D+	1.30	
60% - 63%	D	1.00	D range denotes unsatisfactory performance
57% - 60%	D-	0.70	
< 57%	F	0.00	

Undergraduate vs. Graduate Credit

Undergraduate students enrolled in 700 level courses will receive undergraduate credit (not graduate credit) unless they have a previously approved senior rule application or dual/accelerated enrollment form on file in the Graduate School. Undergraduate credit earned in 700 level courses cannot later be counted toward a graduate degree.

Extra Credit

Extra credit opportunities will be provided to all students throughout the semester in quizzes, exams, and labs. Students should take advantage of extra credit opportunities when they are available. Individual extra credit for students to increase failing grades at the (e.)12 4oBailai0

Date	Class Topic	Readings

	Date	Class Topic	Readings	Flipped Lab Prep	Lab Report Due at Class Start Time Through Blackboard
Week 6	Tue, 9/26	Flipped Lab: (& Quiz) Introduction to Classification using Logistic Regression and Evaluating the Performance of a Classifier			
	Thu, 9/28	Lecture: Introduction to Cluster analysis and evaluation with k-means	Book Sections: 2.4, 7.1, 7.2, 7.5	Implement / evaluate a clustering analysis using K means	Lab: Intro to Classification with Logistic Regression
Week 7	Tue, 10/03	Flipped Lab: (& Quiz) Introduction to Cluster analysis and evaluation with k-means			
	Thu, 10/05	Lecture: Introduction to Association Analysis	Chapter 5	Implementing an association analysis	Lab: Intro to Clustering
Week 8	Tue, 10/10	Flipped Lab: (& Quiz) Introduction to Association Analysis			
	Thu, 10/12	Lecture: Data preprocessing, again!	Book section: 2.3, 4.11, References on slides.		Lab: Intro to Association Analysis
Week 9					

	Date	Class Topic	Readings	Flipped Lab Prep	Lab Report Due at Class Start Time Through Blackboard
Week 12	Tue, 11/07	Flipped Lab: (& Quiz) Rule-based classifiers and Nearest Neighbor Classifiers			
	Thu, 11/09	Lecture: Bayesian classifiers: Naïve Bayes and Bayesian Networks	Book Sections: 4.4-4.5	Implement bayesian classification analysis using the preferred software.	Lab: Rule-based and KNN classifiers
Week 13	Tue, 11/14	Flipped Lab: (& Quiz) Bayesian classifiers: Naïve Bayes and Bayesian Networks			
	Thu, 11/16	Lecture: Introduction to Artificial Neural Networks	Book section: 4.7	Implement ANN analysis using the preferred method	Lab: Bayesian Classifiers
Week 14	Tue, 11/21	Flipped Lab: (& Quiz) Introduction to Artificial Neural Networks			
	Thu, 11/23	NO CLASSES:			